Trend Study 10R-23-00

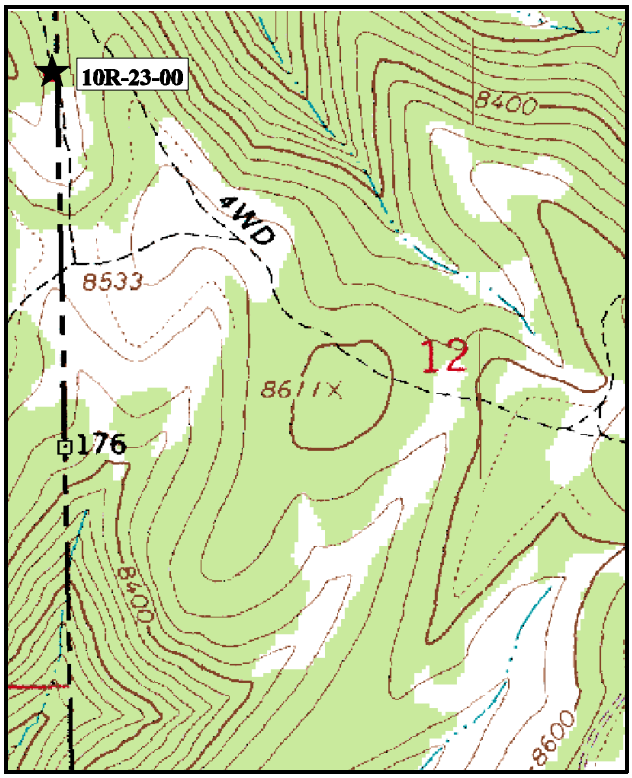
Study site name: South Rathole . Range type: Aspen-Grass.

Compass bearing: frequency baseline 310°M.

Footmark (first frame placement) 5 feet, No frequency cross-belts, Quadrats were read along baseline starting on the left at 5' then alternating sides every 5' ending on 100'. Quadrats bases are in line with each foot mark so that the quadrat is parallel to the baseline.

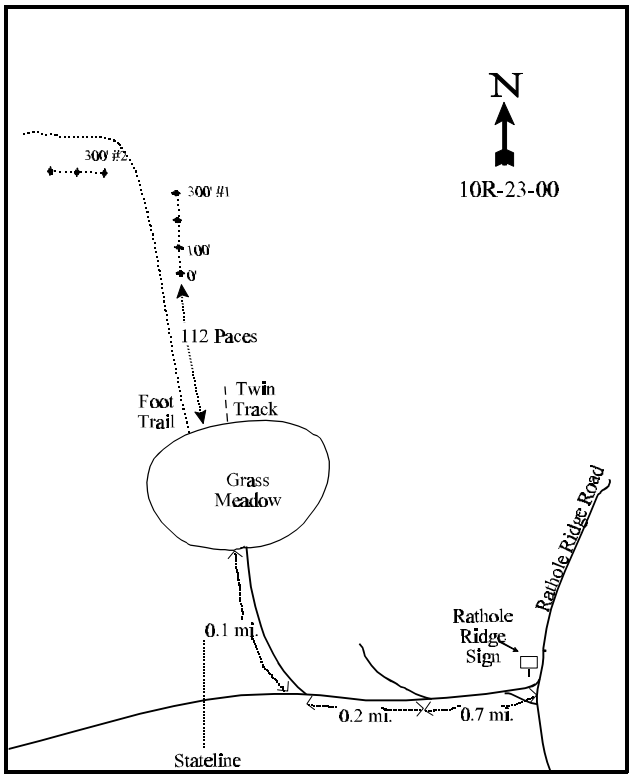
LOCATION DESCRIPTION

From the Junction of Atchee Ridge Road, Rathole Canyon and Rathole Ridge Road follow Rathole Ridge Road up to the a sign pointing to Rathole Ridge. Take this road 0.7 miles to the first fork. Stay left 0.2 miles to another fork, take a right here follow this road 0.1 miles to a grassy meadow, park here. A small trail (not the twin track) starts at the north east corner of the meadow, follow this trail for about 0.25 miles through the thin aspen stand to the 0' stake on the right of the trail. The first 100' is at a bearing of 310°M with the 200' and 300' at 315°M and 291°M respectively. The beginning of the 400' belt is located about 150' from the end of the 300' belt at 240°M. The 400' and 500' belts are at 256°M and 254°M respectively.



Map name: Rathole Ridge

Township 6 S , Range 105 W , Section 12 .



Diagrammatic Sketch

UTM 4380457.989 N, 667394.466 E

DISCUSSION

Trend Study No. 10R-23

The South Rathole transect was established in 1998 as a special studies site to monitor the perceived conflicts over elk and livestock use in the North Bookcliffs. The transect was placed in a small narrow meadow surrounded by aspen and large scattered serviceberry. Elevation is 8,200 feet with a northwest aspect and a moderate slope of 10-12%. Pellet group transect data in 1998 estimated 10 elk days use/acre (25 edu/ha) and 7 cow days use/acre (17 cdu/ha). Pellet group transect data in 2000 estimates moderate use by elk at 66 elk days use/acre (163 edu/ha). No deer pellets were sampled in the pellet transect and were found in only 1 quadrat. Use by livestock is estimated at 2 cow days use/acre (5 cdu/ha) in 2000. This area is within the Atchee Ridge allotment which permits cattle grazing from June through September on a deferred rest rotation basis.

Soils on the site are loamy in texture with an average temperature of nearly 61°F at nearly 18 inches in depth. The soil is relatively deep with an estimated effective rooting depth of just over 29 inches. The stoniness index profile estimated from penetrometer readings shows most readings to be over 24 inches in depth. However, there is very little rock in the profile and these penetrometer readings are more a measure of compaction than rockiness. The soil reaction is slightly acidic (pH of 6.3). Organic matter is moderately high at nearly 5%. Vegetation and litter cover are abundant in 2000, at 56% and 67% respectively. Erosion is minimal due to this abundant protective ground cover.

The immediate area where the transect was placed is dominated by herbaceous vegetation with scattered browse. However, the narrow meadow is surrounded by aspen, serviceberry, and snowberry along the meadow's edge. Browse species combine to contribute only 8% of the total vegetation cover. Snowberry provides over half of the browse cover and is estimated at 740 plants/acre in 2000. Most of the population consists of mature plants (73%), but recruitment is high at 22%. Use is light and vigor good for the snowberry population. Mountain big sagebrush was estimated at 1,340 plants/acre in 1998, slightly decreasing to 1,200 plants/acre in 2000. This decrease in density is due to fewer young plants in population in 2000. Even with the decrease in the young age class, recruitment has been high in both sampling years, 79% in 1998 and 42% in 2000. Percent decadency is low at 7% in 2000, use is mostly light, and vigor generally good. Serviceberry is scattered throughout the area with an estimated population of 40 plants/acre in 2000. Serviceberry is more dense on the slopes to the north of the transect with many large individuals being partly unavailable to use due to their height. Use is light and vigor good on the few plants that were sampled along the transect, with percent decadency being high at 50% with a high amount of dead stems within each serviceberry. Aspen is sparse on the meadow itself, but is abundant on the surrounding area. In 2000, aspen was estimated at 100 plants/acre in the meadow with all of these being young sprouts. Use is light and vigor good on the young plants that were sampled.

Currently, both the grasses and forbs provide nearly the same amount of plant cover at around 21%. Grasses consist of eight perennial species with Kentucky bluegrass being the most dominant. Kentucky bluegrass provided over 80% of the grass cover in both 1998 and 2000. Over one-third of the total vegetative cover in both years sampled. Other moderately abundant grasses include thickspike wheatgrass and subalpine needlegrass. Grasses increased in sum of nested frequency in 2000. Forbs are abundant consisting mostly of increasers such as dandelion, yarrow, and Eaton fleabane. Dandelion provides 56% of the forb cover in both 1998 and 2000, nearly one-fourth of the total vegetative cover in both years. Perennial forbs increased in sum of nested frequency in 2000, with annual species slightly decreasing in nested frequency and remaining widely scattered.

1998 APPARENT TREND ASSESSMENT

Soils appear stable with abundant protective ground cover from vegetation and litter. Erosion is minimal and should remain so in the future. Browse is not particularly abundant in the meadow itself, but as this is summer range, the browse component is not as important as at lower elevation transitional and winter ranges. The surrounding area does consist of some dense aspen clones and large serviceberry which provides good cover for wildlife. Herbaceous vegetation is abundant. Grasses are fairly diverse with eight species being sampled. These species combine to provide over 29% cover. Forbs are abundant and diverse and contribute to nearly 22% average cover. The main negative factor with the forb component is that increasers are dominant, especially dandelion.

2000 TREND ASSESSMENT

Trend for soils is stable. Vegetation and litter cover remain abundant and provide adequate protective ground cover to minimize erosion. Trend for browse is stable. Mountain big sagebrush continues to have high recruitment, light use, and good vigor. This would be typical for summer range. Young aspen plants are slowly moving into the meadow and show light use and good vigor. Trend for the herbaceous understory is slightly up, but remains in poor condition as increaser species are dominant. Perennial sum of nested frequency for both grasses and forbs increased in 2000.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - slightly up (4)

HERBACEOUS TRENDS --
Herd unit 10R, Study no: 23

Type	Species	Nested Frequency '98	Nested Frequency '00	Quadrat Frequency '98	Quadrat Frequency '00	Average Cover % '98	Average Cover % '00
G	Agropyron dasystachyum	65	*122	27	49	1.01	.96
G	Agropyron trachycaulum	-	*13	-	6	-	.13
G	Bromus carinatus	21	6	5	3	.66	.07
G	Carex spp.	9	14	5	7	.46	.37
G	Poa fendleriana	9	*1	6	1	.05	.00
G	Poa pratensis	470	462	98	97	25.20	17.49
G	Stipa columbiana	68	*105	26	38	2.05	2.28
G	Stipa comata	1	1	1	1	.03	.00
Total for Annual Grasses		0	0	0	0	0	0
Total for Perennial Grasses		643	724	168	202	29.47	21.32
Total for Grasses		643	724	168	202	29.47	21.32
F	Achillea millefolium	157	175	60	63	2.39	1.64
F	Agoseris glauca	-	*32	-	16	-	.13
F	Antennaria rosea	1	-	1	-	.03	-

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'98	'00	'98	'00	'98	'00
F	Androsace septentrionalis (a)	27	*11	12	6	.13	.05
F	Arabis spp.	-	*7	-	4	-	.02
F	Astragalus convallarius	5	-	2	-	.06	-
F	Aster spp.	30	39	10	13	.34	.71
F	Astragalus spp.	15	38	5	12	.51	.72
F	Castilleja spp.	1	-	1	-	.00	-
F	Chenopodium album (a)	2	2	1	1	.03	.00
F	Collinsia parviflora (a)	2	-	1	-	.03	-
F	Crepis acuminata	7	12	3	4	.06	.07
F	Delphinium nuttallianum	-	1	-	1	-	.00
F	Erigeron eatonii	26	64	11	21	.25	1.65
F	Eriogonum spp.	4	12	2	5	.01	.06
F	Ipomopsis aggregata	3	4	2	2	.03	.01
F	Lupinus argenteus	60	*36	28	16	1.51	.36
F	Penstemon caespitosus	1	42	1	18	.00	.72
F	Penstemon spp.	30	1	11	1	.43	.03
F	Phlox longifolia	20	46	11	20	.42	.26
F	Polygonum douglasii (a)	-	3	-	1	-	.03
F	Potentilla gracilis	10	12	4	5	.07	.05
F	Ranunculus inamoenus	-	5	-	2	-	.03
F	Silene menziesii	-	3	-	1	-	.03
F	Taraxacum officinale	320	*338	94	92	12.14	11.67
F	Thalictrum fendleri	-	5	-	1	-	.03
F	Tragopogon dubius	12	18	5	9	.19	.07
F	Vicia americana	154	148	52	54	3.19	2.35
F	Viola spp.	-	3	-	1	-	.03
Total for Annual Forbs		31	16	14	8	0.19	0.09
Total for Perennial Forbs		856	1041	303	361	21.68	20.71
Total for Forbs		887	1057	317	369	21.87	20.80

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 10R, Study no: 23

Type	Species	Strip Frequency '98	Strip Frequency '00	Average Cover % '98	Average Cover % '00
B	Amelanchier utahensis	1	2	.41	.63
B	Artemisia tridentata vaseyana	31	24	.84	.78
B	Populus tremuloides	0	5	-	.16
B	Symphoricarpos oreophilus	22	19	3.32	2.27
Total for Browse		54	50	4.57	3.86

CANOPY COVER --
Herd unit 10R, Study no: 23

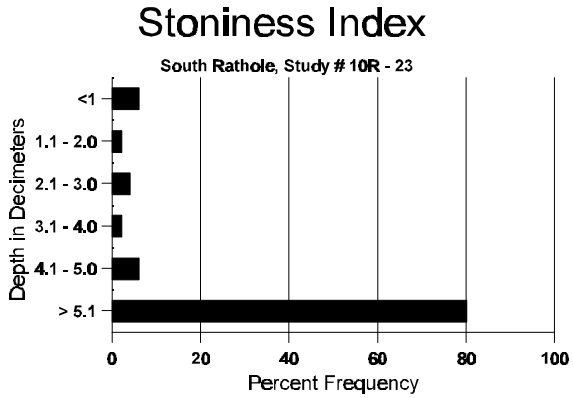
Species	Percent Cover '98	Percent Cover '00
Populus tremuloides	-	9

BASIC COVER --
Herd unit 10R, Study no: 23

Cover Type	Nested Frequency '98	Nested Frequency '00	Average Cover % '98	Average Cover % '00
Vegetation	492	491	62.93	56.22
Rock	28	32	.29	.18
Pavement	63	84	.74	.50
Litter	499	482	61.59	67.47
Cryptogams	76	49	1.25	.90
Bare Ground	208	234	12.44	10.97

SOIL ANALYSIS DATA --
Herd Unit 10R, Study # 23, Study Name: South Rathole

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
29.1	60.8 (17.7)	6.3	50.0	31.4	18.6	4.7	14.3	156.8	.8



PELLET GROUP FREQUENCY --
Herd unit 10R, Study no: 23

Type	Quadrat Frequency		Pellet Transect			
			Pellet Groups per Acre		Days Use per Acre (ha)	
	'98	'00	'98	'00	'98	'00
Elk	9	22	131	861	10 (25)	66 (164)
Deer	-	1	-	-	-	-
Cattle	4	-	78	17	7 (16)	2 (4)

BROWSE CHARACTERISTICS --
Herd unit 10R, Study no: 23

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
S	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
M	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	53	48	0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	25	21	1
D	98	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	100%	00%	+50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	20	Dec:	100%	
'00	40		50%	

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	98	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
Y	98	53	-	-	-	-	-	-	-	-	53	-	-	-	1060			53
	00	24	1	-	-	-	-	-	-	-	25	-	-	-	500			25
M	98	10	1	-	-	-	-	-	-	-	10	1	-	-	220	24	25	11
	00	25	6	-	-	-	-	-	-	-	31	-	-	-	620	20	20	31
D	98	1	2	-	-	-	-	-	-	-	2	-	-	1	60			3
	00	4	-	-	-	-	-	-	-	-	3	-	-	1	80			4
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	160			8

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	04%	00%	01%	-10%
'00	12%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'98	1340	Dec:		4%
'00	1200			7%

Populus tremuloides																		
Y	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	4	-	-	1	-	-	-	-	-	5	-	-	-	100			5
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'98	0	Dec:	-
'00	100		-

Symphoricarpos oreophilus																		
Y	98	20	-	-	1	-	-	-	-	-	21	-	-	-	420			21
	00	6	-	-	2	-	-	-	-	-	8	-	-	-	160			8
M	98	24	1	1	-	-	-	-	-	-	26	-	-	-	520	26	41	26
	00	22	-	-	5	-	-	-	-	-	27	-	-	-	540	26	41	27
D	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
X	98	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'98	02%	02%	00%	-21%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'98	940	Dec:	0%
'00	740		5%